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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/823,841	03/30/2001	Douglas W. Pocius	M-9728 US	6104

24251 7590 10/03/2002

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EXAMINER

AMARI, ALESSANDRO V

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 10/03/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/823,841

Applicant(s)

POCIUS ET AL.

Examiner

Alessandro V. Amari

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 May 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-49 is/are pending in the application.
- 4a) Of the above claim(s) 6,7,14-22,25,26,35-40,48 and 49 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5,8-13,23,24,27-30,34 and 41-47 is/are rejected.
- 7) ☒ Claim(s) 31-33 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,3,5,7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group II in Paper No. 9 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 4, 5, 8-13, 23-24 and 41 are rejected under 35 U.S.C. 102(b) as being anticipated by Paoli U.S. Patent 5,317,170.

In regard to claims 1 and 12, Paoli discloses (see Figure 1B, 4, 7, 8) a light emitting device comprising: a semiconductor light emitter (30) as described in column 2, lines 67-68 and column 3, lines 1-30; and a first optical element forming at least one surface of said semiconductor light emitter as described in column 12, lines 25-48, said first optical element comprising one of Fresnel lens (178) and holographic diffuser (86 in Figure 4) or a method of forming a light emitting device, said method comprising: forming at least one of Fresnel lens (178) and holographic diffuser (48) on at least one surface of a semiconductor light emitter to affect light emitted by said semiconductor

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light emitter (30) as described in column 2, lines 67-68 and column 3, lines 1-30 and column 12, lines 25-48.

Regarding claim 2, Paoli discloses (see Figure 7) that said semiconductor light emitter has at least one light extraction surface (182) from where light is intended to be extracted, and wherein said forming is done on at least one extraction surface of said semiconductor light emitter as described in column 12, lines 25-38.

Regarding claim 4, Paoli discloses that said forming is executed concurrently with a wafer-bonding process, said wafer-bonding process comprising: removing a first substrate of said semiconductor light emitter; and bonding a second substrate to said semiconductor light emitter as described in column 8, lines 47-64.

Regarding claim 5, Paoli discloses said forming comprises at least one method selected from etching, milling, ablation, machining, scribing, electron discharge machining, and stamping as described in column 12, lines 31-34.

Regarding claim 8, Paoli discloses that said confining comprises at least one method selected from applying the Holonyak process, using selective area growth, using selective area bonding, using diffusion, and using ion implantation as described in column 5, lines 17-24.

Regarding claims 9 and 13, Paoli discloses coating one or more surfaces of said semiconductor light emitter with a reflective material as described in column 9, lines 23-26.

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Regarding claim 10 (which is dependent off of claim 1), Paoli discloses coating said holographic diffuser with a reflective material as described in column 10, lines 43-49.

Regarding claim 11, Paoli discloses forming an optical element on the surface opposite of said extraction surface as described in column 12, lines 25-48.

Regarding claim 23, Paoli discloses that said first optical element is designed to achieve one of light focusing, light collimating, and light diverging as described in column 12, lines 39-45.

Regarding claim 24, Paoli discloses that said first optical element is designed to direct light in a preselected direction as described in column 12, lines 39-45.

In regard to claim 41, Paoli discloses a light emitting diode array (see Figure 2) comprising a plurality of light emitting devices (38), a light emitting device comprising: a semiconductor light emitter (30); and one of a Fresnel lens (178) and a holographic diffuser formed on a surface of said semiconductor light emitter as described in column 2, lines 67-68 and column 3, lines 1-30 and column 12, lines 25-48.

4. Claims 27, 29, 34 and 45-47 are rejected under 35 U.S.C. 102(b) as being anticipated by Ito et al. U.S. Patent 5,130,531.

In regard to claim 27, Ito et al. discloses (see Figures 7, 10, 11, 13, 15) a method of forming a light emitting device, said method comprising: stamping at least one optical element (41, 42, 55, 75) on at least one surface of a semiconductor light emitter (2, 53) to affect the light emitted by said semiconductor light emitter as described in column 10, lines 1-60.

Regarding claim 29, Ito et al. discloses that said stamping is done on at least one of a semiconductor layer and a substrate layer of said semiconductor light emitter as described in column 10, lines 42-60.

In regard to claim 34, Ito et al. discloses (see Figures 7, 10, 11, 13, 15) a light emitting device comprising: a semiconductor light emitter (2, 53); and at least one optical element (41, 42, 55, 75) stamped on at least one surface of said semiconductor light emitter, wherein said optical element is a first optical element as described in column 10, lines 1-60.

In regard to claim 45, Ito et al. discloses (see Figures 7, 10, 11, 13, 15) a method for forming a light emitting device, said method comprising: stamping an optical element in a material as described in column 10, lines 42-60, said material being transparent to light emitted from said light emitting device; and bonding said material to a semiconductor light emitter as described in column 10, lines 20-30 and as shown in Figures 7, 11 and 15.

Regarding claim 46, Ito et al. discloses that said stamping precedes said bonding as described in column 10, lines 5-60.

Regarding claim 47, Ito et al. discloses that said bonding precedes said stamping as described in column 10, lines 5-60.

5. Claim 43 is rejected under 35 U.S.C. 102(b) as being anticipated by Tomomura et al. U.S. Patent 4,988,579.

In regard to claim 43, Tomomura et al. discloses (see Figures 8, 11, 12) a display device comprising at least one blue light emitting device, at least one green light

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emitting device, and at least one red light emitting device as described in column 7, lines 36-68 and column 8, lines 1-3, wherein at least one of said blue light emitting device, green light emitting device, and red light emitting device comprises: a semiconductor light emitter (233); and one of a Fresnel lens (131) and a holographic diffuser formed on a surface of said semiconductor light emitter as described in column 12, lines 8-15.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 3, 27-30, 34, 42, and 45-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paoli U.S. Patent 5,317,170 in view of Shimada et al. U.S. Patent 4,689,652.

Regarding claim 3, Paoli teaches the invention as set forth above but does not teach said forming comprises pressing a stamping block against at least one surface of said semiconductor light emitter as described in column 8, lines 15-35 and as shown in Figures 9(a)-9(c).

In regard to claim 27, Paoli teaches (see Figure 7) a method of forming a light emitting device, said method comprising: forming at least one optical element (178) on at least one surface of a semiconductor light emitter to affect the light emitted by said

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semiconductor light emitter as described in column 2, lines 67-68 and column 3, lines 1-30 and column 12, lines 25-48.

Regarding claim 28, Paoli teaches coating a surface of said light emitting device with a reflective layer as described in column 9, lines 23-26.

Regarding claim 30, Paoli teaches that said semiconductor layer comprises a transparent aluminum-bearing compound as described in column 4, lines 21-35.

In regard to claim 34, Paoli teaches (see Figures 1B, 7, 8) a light emitting device comprising a semiconductor light emitter (30); and at least one optical element on at least one surface of said semiconductor light emitter, wherein said optical element is a first optical element (178) as described in column 2, lines 67-68 and column 3, lines 1-30 and column 12, lines 25-48.

In regard to claim 42, Paoli discloses a light emitting diode array (see Figure 2) comprising a plurality of light emitting devices (38), a light emitting device comprising: a semiconductor light emitter (30); and an optical element (178) formed on a surface of said semiconductor light emitter as described in column 2, lines 67-68 and column 3, lines 1-30 and column 12, lines 25-48.

However, Paoli does not teach stamping at least one optical element or that stamping is done on at least one of a semiconductor layer and a substrate layer of said semiconductor light emitter.

Regarding claims 27, 29 and 34, Shimada et al. does teach stamping at least one optical element and that stamping is done on at least one of a semiconductor layer

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and a substrate layer of said semiconductor light emitter as described in column 8, lines 15-35.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to stamp the optical element as taught by Shimada et al. in the device of Paoli in order to form a Fresnel lens.

In regard to claim 45, Paoli teaches a method for forming a light emitting device, said method comprising: forming an optical element in a material, said material being transparent to light emitted from said light emitting device as described in column 2, lines 67-68 and column 3, lines 1-30 and column 12, lines 25-48.

However, Paoli does not teach stamping an optical element in a material, said material being transparent to light emitted from said light emitting device nor bonding said material to a semiconductor light emitter. Nor does Paoli teach wherein said stamping precedes said bonding.

In regard to claims 45 and 46, Shimada et al. teaches stamping an optical element in a material, said material being transparent to light emitted from said light emitting device and bonding said material to a semiconductor light emitter and wherein said stamping precedes said bonding as described in column 8, lines 5-35.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to stamp and bond the optical element as taught by Shimada et al. in the device of Paoli in order to form a Fresnel lens and to secure proper attachment of the lens to the substrate or semiconductor light emitter.

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8. Claims 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Paoli U.S. Patent 5,317,170 in view of Shimada et al. U.S. Patent 4,689,652 and in further view of Tomomura et al. U.S. Patent 4,988,579.

In regard to claim 44, Paoli teaches (see Figure 1A, 7, 8) a display device comprising a light emitting device which comprises: a semiconductor light emitter (30); and one of a optical element (178) formed on a surface of said semiconductor light emitter as described in column 2, lines 67-68 and column 3, lines 1-30 and column 12, lines 25-48.

However, Paoli does not teach an optical element stamped on a surface of said semiconductor light emitter.

Shimada et al. does teach stamping at least one optical element on surface of said semiconductor light emitter as described in column 8, lines 15-35.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to stamp the optical element as taught by Shimada et al. in the device of Paoli in order to form an optical element.

Furthermore, Paoli in view of Shimada et al. does not teach a display device comprising at least one blue light emitting device, at least one green light emitting device, and at least one red light emitting device.

Tomomura et al. does teach (see Figures 11 and 12) a display device comprising at least one blue light emitting device, at least one green light emitting device, and at least one red light emitting device, wherein at least one of said blue light emitting

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device, green light emitting device, and red light emitting device as described in column 7, lines 36-68 and column 8, lines 1-3.

It would have been obvious to one having ordinary skill in the art at the time the invention was made utilize the red, green and blue light emitting devices as taught by Tomomura et al. in the combination in order to produce light with high efficiency and brightness over a large spectral range.

9. Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Paoli U.S. Patent 5,317,170 in view of Shimada et al. U.S. Patent 4,689,652.

Regarding claim 47, the combination teaches the invention as set forth and wherein said stamping precedes said bonding but does not teach the reverse, i.e., said bonding precedes said stamping. It would have been obvious to one having ordinary skill in the art at the time the invention was made to reverse the process wherein bonding precedes stamping, since it has been held that a mere reversal of working parts of a device involves only routine skill in the art. One would have been motivated to reverse the process for the purpose of securing proper attachment of the material to the semiconductor light emitter.

Allowable Subject Matter

10. Claims 31-33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. Claim 31 is allowable over the prior art for at least the reason that the prior art fails to teach or reasonably suggest, "said stamping is executed at an elevated

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temperature, said elevated temperature being higher than room temperature" as set forth in the claimed combination.

The prior art of record, Paoli and Shimada et al. teach a light emitting device comprising a semiconductor light emitter; and at least one optical element stamped on at least one surface of said semiconductor light emitter, wherein said optical element is a first optical element but does not teach that said stamping is executed at an elevated temperature, said elevated temperature being higher than room temperature and there is no motivation or teaching to modify this difference as derived.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Feldman et al. U.S. Patent 6,075,627 also teach a light emitting device comprising a semiconductor light emitter and a holographic diffuser on a surface of the semiconductor light emitter. Scifres et al. U.S. Patent 4,815,084 teach (see Figures 8 and 9) a semiconductor light emitter and Fresnel lenses formed on the surface of the semiconductor light emitter.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alessandro V. Amari whose telephone number is (703) 306-0533. The examiner can normally be reached on Monday-Friday 8:00 AM to 5:30 PM.

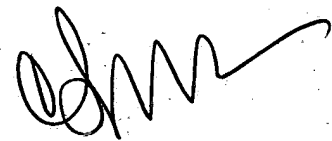
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on (703) 308-1687. The fax phone numbers for the organization where this application or proceeding is assigned are (703)

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872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

ava *ava*
September 25, 2002



Cassandra Spyrou
Supervisory Patent Examiner
Technology Center 2800